ASUS ROG-ATRAL-RTX5090-O32G-GAMING

ASUS ROG Astral GeForce RTX™ 5090 OC Edition Gaming Graphics Card User Manual

Brand: ASUS

Model: ROG-ATRAL-RTX5090-O32G-GAMING

INTRODUCTION

The ASUS ROG Astral GeForce RTX 5090 introduces ROG's first quad-fan graphics card, coupled with a patented vapor chamber, increased heatsink fin density, a phase-change GPU thermal pad, towering default clock speeds, boosted power delivery, and more. These premium innovations – amplified by an eye-catching die-cast frame and metal GPU bracket – combine to deliver absolute performance that can handle even the most demanding gaming scenarios.

WHAT'S IN THE BOX

Verify that all items are present in your product package:

- ROG-ATRAL-RTX5090-O32G-GAMING graphics card
- speedsetup manual
- ROG Graphics card holder
- ROG Velcro Hook & Loop
- ROG Magnet

KEY FEATURES

- **Powered by NVIDIA Blackwell architecture and DLSS 4:** Experience cutting-edge graphics performance and AI-powered rendering.
- **Quad-fan design:** Boosts air flow and pressure by up to 20% for optimal cooling.
- **Patented vapor chamber with milled heatspreader:** Designed for lower GPU temperatures and enhanced thermal transfer.
- **Phase-change GPU thermal pad:** Ensures optimal heat transfer, lowering GPU temperatures for enhanced performance and reliability.
- **3.8-slot design:** Features a massive heatsink and fin array optimized for airflow from the four Axial-tech fans.
- **OC Mode:** Achieves a boost clock of 2610 MHz (Default mode: 2580 MHz).

SETUP

Follow these steps to properly install your ASUS ROG Astral graphics card:

1. **Prepare your system:** Ensure your computer is powered off and unplugged from the wall outlet. Open your PC case.

2. **Locate PCIe slot:** Identify an available PCIe 5.0 x16 slot on your motherboard.

3. **Install the graphics card:** Carefully align the graphics card with the PCIe slot and press down firmly until it is securely seated. Ensure the retention clip locks into place.

4. **Secure the card:** Use screws to fasten the graphics card to the PC case's expansion slot brackets.

5. **Connect power cables:** Connect the required 12VHPWR power cables from your power supply unit (PSU) to the graphics card. This model requires sufficient power delivery, typically from an 850W or higher PSU.

6. **Install support bracket:** Utilize the included ROG Graphics card holder to prevent GPU sag and provide additional stability.

7. **Close case and connect display:** Close your PC case. Connect your display cable (HDMI or DisplayPort) from the graphics card to your monitor.

8. **Power on and install drivers:** Power on your computer. Once Windows loads, download and install the latest NVIDIA GeForce drivers from the official NVIDIA website.

Figure 1: The ASUS ROG Astral GeForce RTX 5090 OC Edition graphics card alongside its retail packaging.

Figure 2: Illustration of the ultimate quad-fan cooling design, showing four fans for powerful vertical airflow.

Cooling Expertise

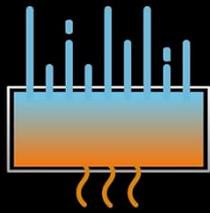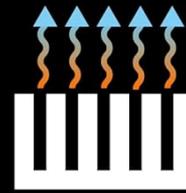**MaxContact Design**

A special ASUS manufacturing process that effectively expands the surface area of the heat spreader that sits atop the GPU by 5%.

ASUS MaxContact   Traditional Heat Spreader

Expands contact surface by **5%**

Patented Vapor Chamber

A patented vapor chamber designed with milled pathways allows heatpipes to sink in without flattening, boosting heat dissipation efficiency.

Optimized Fin Spacing

The addition of a fourth fan permits more densely packed heatsink fins, increasing cooling potential.

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Figure 3: Details on cooling expertise, including MaxContact Design, Patented Vapor Chamber, and Optimized Fin Spacing for enhanced heat dissipation.

Premium Power Delivery

Powerful 80-amp MOSFETs deliver over 35% more headroom than the standard design, ensuring enhanced performance, stability and higher overclocking potential.
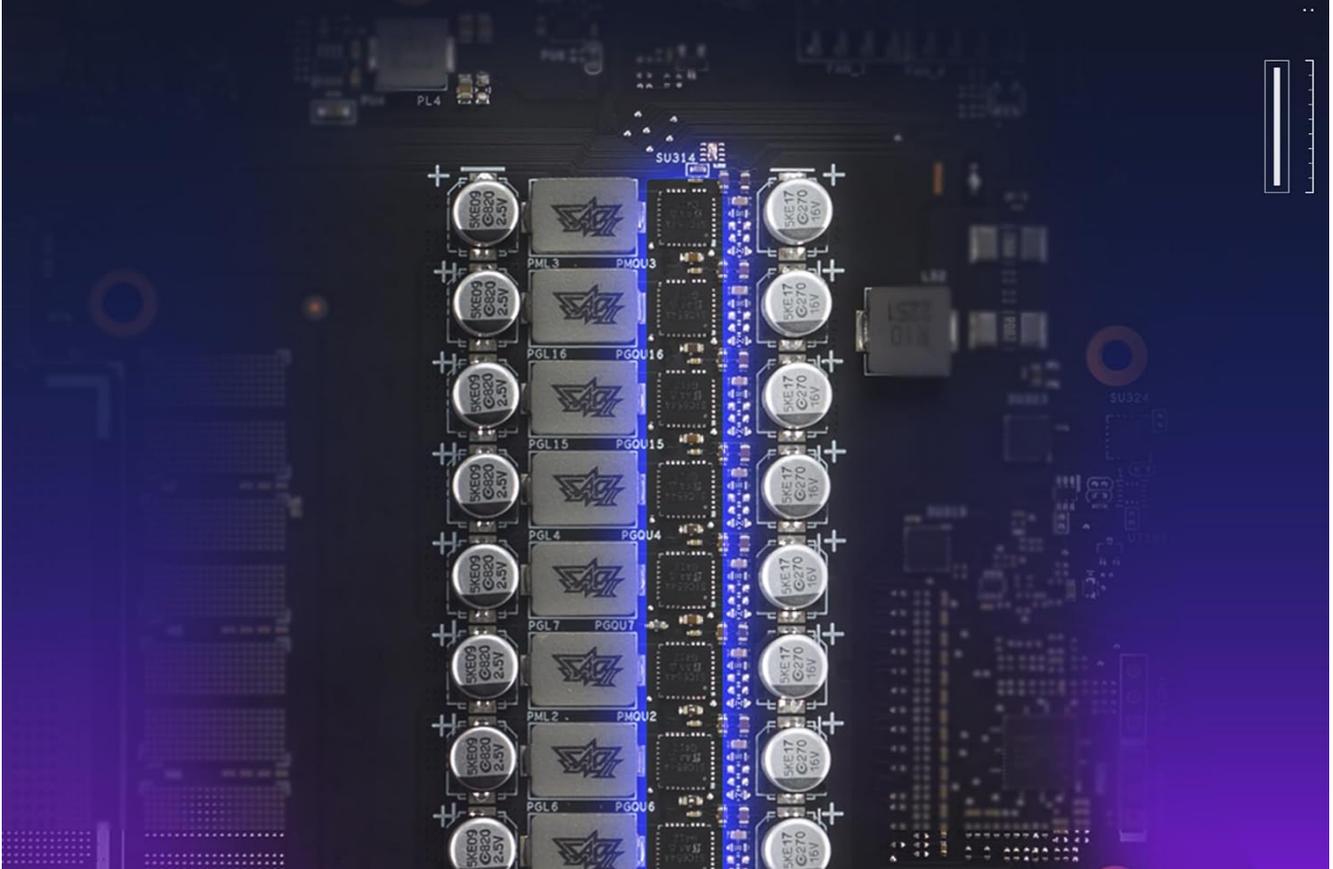
Figure 4: View of the premium power delivery system with 80-amp MOSFETs for enhanced performance and stability.

Ultimate Durability

Phase-Change GPU Thermal Pad

By melting to effectively fill the gaps between the GPU and the thermal module, a premium phase-change GPU thermal pad provides superior thermal conductivity and enhanced heat dissipation.

ΔT Represents the change in hotspot temperature. Smaller values indicate better heat dissipation.

Traditional Thermal Paste

Phase-Change Thermal Pad

Time

Protective PCB Coating

A protective conformal coating helps protect against short-circuits caused by moisture, dust or debris.

GPU Protection

ASUS GPU Guard applies adhesive to secure all four corners to reduce the risk of cracks.

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Figure 5: Features contributing to ultimate durability, including the Phase-Change GPU Thermal Pad, Protective PCB Coating, and GPU Protection.

Figure 6: The graphics card paired with a ROG Thor III PSU, illustrating the recommended power supply for optimal performance.

Figure 7: Overview of supporting software: Aura Sync for RGB customization, GPU Tweak III for tuning, and MuseTree for AI image generation.

OPERATING THE GRAPHICS CARD

Once the drivers are installed, your graphics card is ready for use. For optimal performance and customization, consider utilizing the following software:

- **ASUS GPU Tweak III:** This utility allows you to monitor GPU statistics, adjust clock speeds, fan curves, and voltage settings. It includes OC Mode for maximum performance and Silent Mode for reduced noise.
- **ASUS Aura Sync:** Customize the RGB lighting on your graphics card to match your system's aesthetic.
- **NVIDIA GeForce Experience:** Optimize game settings, update drivers, and record gameplay.

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Video 1: An overview of the Asus Astral 50 series Graphics card, highlighting its design and features.

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Video 2: A detailed product video showcasing the Asus Astral 50 Series Graphics card.

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MAINTENANCE

Regular maintenance helps ensure the longevity and optimal performance of your graphics card:

- **Dust Removal:** Periodically clean dust from the fans and heatsink using compressed air. Ensure the system is powered off before cleaning.
- **Driver Updates:** Keep your graphics drivers updated to the latest version. This can improve performance, stability, and compatibility with new games and applications.
- **Temperature Monitoring:** Use GPU monitoring software (e.g., GPU Tweak III) to keep an eye on temperatures during heavy loads. Ensure adequate airflow within your PC case.

TROUBLESHOOTING

If you encounter issues with your graphics card, consider the following common troubleshooting steps:

- **No Display/Black Screen:**
    - Ensure all power cables are securely connected to the graphics card and PSU.
    - Verify the display cable is firmly connected to both the graphics card and the monitor.
    - Try a different display cable or monitor to rule out compatibility issues.

- **Driver Issues/Crashes:**
    - Perform a clean installation of the graphics drivers. Use a driver uninstaller utility (like DDU) to remove old drivers before installing new ones.
    - Ensure your operating system is up to date.

- **Overheating:**
    - Check for proper airflow inside your PC case. Ensure fans are spinning and not obstructed by dust.
    - Consider improving case ventilation or adjusting fan curves via GPU Tweak III.

- **Performance Issues:**
    - Verify that your system meets the recommended specifications for the games or applications you are running.
    - Ensure your CPU is not bottlenecking the GPU.
    - Check for background applications consuming system resources.

SPECIFICATIONS

Feature	Detail
Max Screen Resolution	7680x4320 Pixels
Memory Speed	2610 MHz
Graphics Coprocessor	NVIDIA GeForce RTX 5090
Chipset Brand	NVIDIA
Card Description	Dedicated

Graphics Card Ram Size	32 GB
Brand	ASUS
Series	ROG-ATRAL-RTX5090-O32G-GAMING
Item model number	ROG-ATRAL-RTX5090-O32G-GAMING
Item Weight	5 pounds
Package Dimensions	16.85 x 9.06 x 4.96 inches
Color	BLACK
Manufacturer	ASUS
Date First Available	January 30, 2025
Video Output Interface	HDMI 2.1b x2, Native DisplayPort 2.1a x3

WARRANTY AND SUPPORT

Your ASUS ROG Astral GeForce RTX 5090 OC Edition Gaming Graphics Card comes with a manufacturer's warranty. Please refer to the warranty card included in your package for detailed terms and conditions.

For technical support, driver downloads, and further assistance, please visit the official ASUS support website or contact their customer service.

ASUS Support: https://www.asus.com/support/